



Ruffed Grouse



Photo Courtesy of the Ruffed Grouse Society

Introduction

The ruffed grouse (*Bonasa umbellus*) is North America's most widely distributed game bird. As a very popular game species, the grouse is in the same family as the wild turkey, quail and pheasant. They range from Alaska to Georgia including 34 states and all the Canadian provinces. Historically in Indiana, its range included the forested regions of the state. Today the range is limited to the south central and southeastern 1/3 of the state in the southern hill country, with a few pockets in counties bordering Michigan. Ruffed grouse weigh between 1 and 1.5 pounds and grow to 17 inches in length with a 22-inch wingspan. They exhibit color phases with northern range birds being reddish-brown to gray while those in the southern part of their continental range, including Indiana, are red.

History and Current Status

Before settlement, grouse populations ranged throughout the hardwood region of the state. In areas where timber was permanently removed for farms, homes and towns grouse habitat has been lost. During the early 1900's, many farms in the south-central portion of Indiana were abandoned. As a result of this farm abandonment, the vegetation around old home sites and in the fallow fields grew through early plant succession stages. About the same time, the reforestation era began as abandoned farms reverted into public ownership under the management of state and federal natural resource agencies. By the 1950's, natural succession, reforestation, and timber harvest management were beginning to form a myriad of early successional forest patches across a fairly contiguous forested landscape.

In the 1960's, the distribution of ruffed grouse was primarily limited to a few counties (Brown, Jackson, Monroe, Morgan, Martin, and Lawrence) referred to as the "remnant" or "residual" range. Ruffed grouse were trapped in the remnant range and transplanted to unoccupied habitats in adjacent areas or counties to increase grouse numbers. As those reestablished populations grew, grouse were trapped and transplanted from those areas and southern Michigan to reestablish ruffed grouse in Indiana where suitable habitat existed.



Ruffed Grouse populations were reestablished in Indiana by transplanting wild birds.

Photo Courtesy of The Ruffed Grouse Society

Through natural range expansion and restoration, ruffed grouse populations quickly capitalized on the many early successional forest stands that began to form in the 1950's and reached their modern day peak in the late 1970's. In 1983, ruffed grouse were known to exist in 41 of the 92 Indiana counties, their widest distribution since 1865. In 1965, the first hunting season in 28 years was established. By the early 1980's, around 17,000 hunters were harvesting approximately 20,000 ruffed grouse annually.

Over the last 25 years as forest succession in the heart of the ruffed grouse range advanced toward maturity and public opposition to timber harvests on public lands increased, grouse populations began a very steady decline. The ruffed grouse restoration efforts would have been more successful if intensive timber management had continued.

Habitat loss is once again the cause for the declining grouse population, but the reason for the loss has changed. Although some areas of the state have experienced an increase in forestland, the amount of small-diameter forest components has declined by 56%. Shortly after the abandoned farms had reached the mature forest stage again, public opposition to timber harvesting began to increase, especially on public forestlands. Social attitudes, including a resistance to even-age timber harvest management (e.g., clear cutting) on both public and private lands has resulted in a dramatic loss of early successional forest habitats across the most contiguous forest lands in Indiana. Natural or man induced vegetative disturbances (e.g., wind storms, tornadoes, wildfires, and timber harvests) are an integral part of ecosystem dynamics often needed to revitalize and

maintain the diversity of an ecosystem. Low ruffed grouse populations are just one indication of a forest ecosystem lacking frequent natural or man-induced vegetative disturbance events. Today, just 30 years since the first ruffed grouse hunting season, grouse hunters number less than 3,000 and the annual grouse harvest is less than 500 birds, 98% less than during the peak years of the early 1980's.



Forest disturbance is necessary to produce grouse habitat.
Photo Courtesy of the Ruffed Grouse Society

Habitat

Ruffed grouse are very specific regarding their preferred habitats. While they will use different habitat types depending on the season, they are an area sensitive forest interior species dependent on early successional hardwood forests. Ruffed grouse select areas within or adjacent to forests and forest edges that contain a very high number of woody plants per acre. The high numbers of small woody stems provide protective cover from various predators and a rich source of insect and herbaceous foods used by grouse. As woodlands mature over time, the number of woody stems declines as the woody components become concentrated in fewer and larger trees with a more open understory. When the forest changes from hardwood thickets to more park-like open stands of trees, quality grouse habitat is lost. As the forest matures, the larger tree canopy prevents sunlight from reaching the forest floor thereby reducing herbaceous plants, shrubs, and saplings necessary for good grouse food and cover.

Grouse habitat management focuses on breaking up large monotypic older woods and providing a diversity of vegetation types including; young hardwoods, brushy field edges,

old fields in various stages of growth, regenerating forest stands, abandoned home sites and brushy creek bottoms. Studies have shown that habitat utilized throughout the year averaged 8,000 woody stems per acre with quality brood cover as high as 15,000 stems per acre or about 1 woody stem for every 3 square feet. In southern Indiana, prime grouse habitat will occur between 5 to 15 years after a major disturbance such as a destructive fire, clear-cut or massive wind damage. The quality of grouse habitat diminishes quickly with most areas going out of grouse habitat 25 years after the disturbance event.

Grouse usually nest in relatively open medium sized timber with sparse shrub and ground cover. This habitat selection probably enables the hen to see predators at a distance enabling her to draw them away from the nest if necessary. Upon hatching, the hen then takes her brood to more dense cover such as upland thickets and edges around old fields, abandoned home sites and brushy creek bottoms where the chicks have adequate cover while they feed mainly on insects. Dense cover and numerous insects sustain the chicks for the first 4 – 6 weeks of life. During fall and winter, grouse utilize dense areas of hardwood regeneration such as grape thickets and tangles along forest edges, tornado blow-downs and clear-cuts. These early succession forest habitat types are also preferred by other species of concern, i.e. American woodcock, yellow-breasted chat, Canada warbler, eastern towhee and others.

Food Habits

During the first few weeks of life chicks feed almost entirely on protein rich insects for quick development. Only a small percentage of the total adult diet includes insects however, while most food ingested comes from vegetation. A good interspersion of habitat types provides the food necessary to sustain a grouse population. Some of the most commonly used plant species are: soft mast (dogwood, blackberries and sassafras berries), acorns, wild grape, sumac, greenery of plants such as Christmas fern, and buds and flowers of woody trees and shrubs. Most of the food requirements of ruffed grouse may be met by managing for a variety of early succession stages of old fields, hardwoods and brushy forest edges. In the winter months, especially when there is persistent snow cover, ruffed grouse survive very well by feeding on the buds of trees like aspen and cherry.



Dogwood



Sumac

A variety of soft mast species are requirements for ruffed grouse.

Habitat Management

Historically, grouse habitat was created and sustained by wildfires (both natural and man-caused) and natural disturbances such as windstorms, beaver activity, tree diseases, insects and flooding. In most forests today, these disturbances are either controlled or not as effective at creating changes necessary to produce grouse habitat. Early successional habitats revert to mature forests in time. To ensure quality habitat, **aggressive** timber harvest, timber stand improvement (TSI) and even firewood cutting must be accomplished at regular intervals (every 10 years or so). Even-age management is a system of growing, harvesting and reproducing trees in stands of timber that are essentially the same age. Methods of even age management are clear-cutting, seed tree harvesting and shelterwood harvests. Since oak trees need sunlight to out-compete other species, these management systems are also excellent ways to regenerate oak stands.

Intensive and aggressive forest management is the most effective methods to create ruffed grouse habitat, as well as providing habitat for a great variety of other game and non-game wildlife. When the sunlight reaches the ground in a newly opened forest area, many food plants including green forage, fruit bearing trees and shrubs, berries, weed seeds, legumes and browse are promoted. As the trees begin growing, additional fruits and nuts are produced for many years. As the forest develops, regular canopy thinning then allows understory plants to produce high yields of berries and other foodstuffs. Along with the thick cover of shrubs and many woody stems per acre, this developing early forest provides ideal ruffed grouse habitat.



Intensive forest management is necessary to produce ruffed grouse habitat.

Photo courtesy of The Ruffed Grouse Society

Due to the specific habitat requirements of grouse, it is not feasible for landowners to manage specifically for grouse unless they own a substantial amount of land and/or control land near an existing grouse population. A landowner desiring to manage for ruffed grouse should have control over at least 80 – 100 acres of forest and make at a minimum 2.5-acre openings (5 – 10 acres would be better) to have an impact on grouse habitat. These patches should be rotated throughout the tract on a 60 – 80 year cycle, where the young forest patches comprise 50% of the tract. Preferably the managed cuts should lie adjacent to larger forest holdings (other private forest or federal or state forests) to be effective.

The goal of grouse management is to use timber management techniques (silviculture) that remove enough of the overstory canopy to allow for the greatest stem densities in the managed area. Clearcuts (immediate 100% canopy removal) of 10-20 acres are the ideal silvicultural technique for managing lands for ruffed grouse but are seldom practical or acceptable to the small woodland owner, especially if the landowner has a variety of land management objectives. Shelterwood and seed tree silvicultural techniques are types of initial intermediate cuts prior to a 100% overstory removal that are employed to enhance certain types of tree regeneration (e.g., oaks). Shelterwood and seed tree techniques can create good grouse habitat depending on the time interval between the initial and final cut (less than 10 years is preferred). Single tree selection techniques generally are not intense enough to create meaningful grouse habitats unless they are performed over relatively large areas (greater than 200 acres). If a minimum of at least a 25-30% reduction in tree basal area or a post harvest residual stand of only 30-40% canopy closure is achieved, good grouse habitat may be provided.

The North American Ruffed Grouse Conservation plan indicates that to restore grouse drumming male populations in south-central Indiana to 1980 level, an increase of 14% or 523,200 acres of small-diameter forest would be necessary. Furthermore, maintaining this amount of small-diameter forest would require annual even-age management on 26,160 acres. Since ninety percent of all the forestland in Indiana is privately owned, mainly by relatively small landowners, and the current public opposition to timber harvests makes it difficult for public land managers to manage for small diameter and even age forest habitats, the future of the ruffed grouse in Indiana is not good. The public's perceptions about timber harvests must change if ruffed grouse management through habitat development is to be successful. As discussed earlier, vegetative disturbance is an integral part of forest ecosystem dynamics. Timber harvesting is a prescribed management tool used to mimic natural disturbance as needed to assure and maintain vegetative and animal diversity within the forest ecosystem.



Male grouse drum on fallen logs to attract females.

Photo courtesy of The Ruffed Grouse Society

Habitat Improvement Practices

Landowners who desire to manage for early successional habitat types will benefit ruffed grouse as well as many other wildlife species by using the following recommendations:

Promote even-age forest management practices at regular intervals (10 years), i.e. clear-cut and seed tree harvests, and provide forest openings. Promote small-patch (2.5 – 10 acre) habitats ranging between 5 – 15 years of age over 50% of the tract.

Exclude livestock from grazing in woods.

Conduct aggressive TSI management and promote a diversity of plant species in the understory i.e. grape, poison ivy, dogwood, hawthorn, sumac, and sassafras.

Establish additional sources of soft mast; elderberry, blackberry, raspberry, and *Viburnum*.

Retain clumps of coniferous trees (pines and red cedar) for winter cover.

Conduct “woodland edge feathering”, by dropping trees along the interface of fields and woods (refer to the Habitat Management Fact Sheet mentioned below).

On hilly topography, focus efforts on the moist north and east facing slopes that typically support a dense shrub understory and good herbaceous ground vegetation.

Establish and maintain legumes (white Dutch clover) on log landings, skid trails, and log roads to provide a source of insects and herbaceous vegetation.

Provide or allow establishment of small clumps of conifers (e.g. red cedar) for roosting and winter cover.



Photo courtesy of The Ruffed Grouse Society

Related *Habitat Management Fact Sheets*:

Woodland Edge Enhancement
Strip Disking
Natural Revegetation
Tree and Shrub Coverts

Tree and Shrub Corridors
Forest Habitat Improvement
Forest Openings

Sources of Information:

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North American Ruffed Grouse Conservation Plan
International Association of Fish & Wildlife Agencies
Resident Game Bird Working Group

Ruffed Grouse and American Woodcock in Decline: Reason for Concern?
Dan Dessecker, Ruffed Grouse Society

Management of Early-Successional Communities in Central Hardwood Forests
Frank R. Thompson, III and Daniel R. Dessecker
USDA General Technical Report NC-195

Prepared by the Indiana Department of Natural Resources, Division of Fish and Wildlife. For up-to-date information concerning the Indiana Division of Fish and Wildlife, or for information on the location of your District Wildlife Biologist, visit our website at www.in.gov/dnr/fishwild/huntguide1/wbiolo.htm

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